

## ABSTRACT

The present disclosure provides methods and compositions for inducing an immune response to an antigen, especially in an immunogenic composition comprising sialic acid where the antigen comprises sialic acid and wherein the immunogenic composition further comprises a sialic acid binding component, e.g., an inactivated or attenuated paramyxovirus or orthomyxovirus such as an influenza virus comprising a sialic acid binding component, e.g., a neuraminidase. The compositions comprising sialic acid and a sialic acid binding component effectively induce a humoral immune response even in a human or animal which is deficient in CD4+ T cells, due to a disease such as ARC or AIDS, and there is also an immunoglobulin class switching even in the absence of CD4+ T cells.